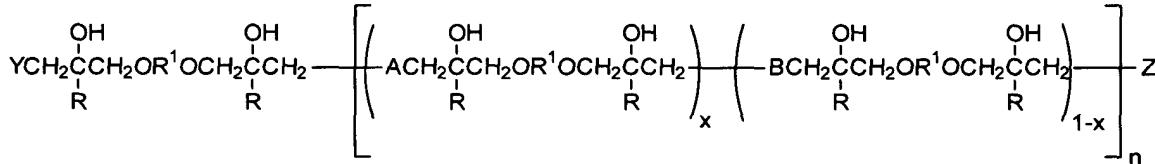


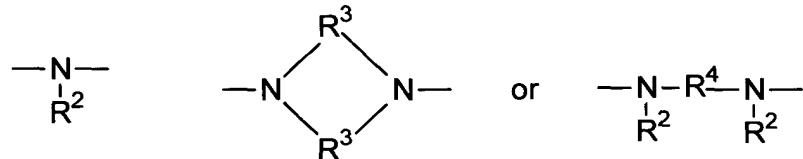
WHAT IS CLAIMED IS:

1. A water-soluble polymer comprising a copolyhydroxyaminoether having side-chains of polyalkylene oxides.

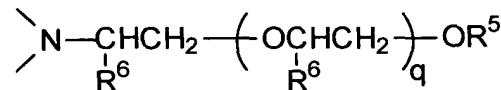
5 2. The polymer of Claim 1 represented by the formula:



10 wherein R is hydrogen or C<sub>1</sub>-C<sub>20</sub> alkyl; R<sup>1</sup> is individually an aromatic or substituted aromatic moiety; Y is an organic moiety that does not contain an epoxy group and Z is an organic moiety, optionally containing an epoxy group; x is 0-0.99; and n is 5-400; each A is individually an amino group represented by one of the formulas:



15 wherein R<sup>2</sup> is hydrocarbyl or substituted hydrocarbyl; R<sup>3</sup> is C<sub>2</sub>-C<sub>10</sub> hydrocarbylene or substituted hydrocarbylene; R<sup>4</sup> is C<sub>2</sub>-C<sub>20</sub> hydrocarbylene or substituted hydrocarbylene, wherein the substituent(s) is hydroxyl, cyano, halo, arlyloxy, alkylamido, arylamido, alkylcarbonyl, 20 or arylcarbonyl; and each B is represented by the formula:



25 wherein R<sup>5</sup> is hydrocarbyl; each R<sup>6</sup> is individually hydrogen, methyl, ethyl, hydrocarbyl or combinations (change made for consistency) thereof; and x is 0-0.99 when q is greater than 40 but less than 0.2 or greater than 0.8 when q is less than 40.

3. The polymer of Claim 2 wherein R is hydrogen; each R<sup>1</sup> is individually isopropylidenediphenylene, 1,4-phenylene, 1,3-phenylene, methylenediphenylene, thiodiphenylene, carbonyldiphenylene, or combinations thereof; each R<sup>2</sup> is individually methyl, ethyl, phenyl, benzyl, 2-hydroxyethyl, 3-hydroxypropyl, 2-hydroxypropyl, 2,3-dihydroxypropyl, 2-(acetamido)ethyl, or combinations thereof; R<sup>3</sup> and R<sup>4</sup> are individually (change made for consistency) ethylene, 1,2-propylene, 1,2-butylene, or combinations thereof; and R<sup>5</sup> is C<sub>1</sub>-C<sub>20</sub> alkyl; R<sup>6</sup> is a mixture of hydrogen and methyl; each of Y and Z are individually bis(2-hydroxyethyl)amino or N-(2-hydroxyethyl)piperazinyl; q is 20 - 50, and n is 10 - 25.

4. The polymer of Claim 3 wherein R<sup>1</sup> is isopropylidenediphenylene and R<sup>2</sup> is 2-hydroxyethyl.

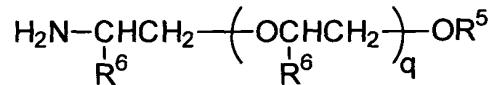
5. The polymer of Claim 3 wherein each R<sup>5</sup> is individually hydrogen, methyl, ethyl, propyl, butyl, benzyl or combinations thereof; Y and Z are bis(2-hydroxyethyl)amino.

6. A process for preparing a water-soluble polymer which comprises (1) reacting an equivalent or excess of a difunctional amine or mixtures thereof with an excess or equivalent amount of a diglycidyl ether of a bisphenol or mixtures thereof, optionally in the presence of a monofunctional nucleophile and optionally in the presence of a catalyst and/or a solvent; or (2) reacting an equivalent or excess of a difunctional amine or mixtures thereof with an excess or equivalent amount of a diglycidyl ether of a bisphenol or mixtures thereof, optionally in the presence of a monofunctional nucleophile which functions as a terminating agent and, optionally, in the presence of a catalyst and/or a solvent; or (3) dissolving in an organic or non-organic solvent an amine selected from the group consisting of primary amine, a bis(secondary) diamine, or a mono-amine-functionalized poly(alkylene oxide) or mixtures thereof,

adding to the amine solution a diglycidyl ether in an amine hydrogen equivalent to epoxide equivalent ratio of from 0.9:1 to 1.2:1 under conditions sufficient to cause the amine moieties to react with the epoxy moieties to form a polymer 5 backbone having amine linkages, ether linkages and pendant hydroxyl moieties.

7. The process of Claim 6 wherein the non-organic solvent is water and the monofunctional nucleophile is selected from the group consisting of a secondary amine, 10 hydrogen sulfide, ammonia, ammonium hydroxide, a monofunctional phenol, an aryloxide salt, a carboxylic acid, a carboxylic acid salt, a mercaptan, and thiolate salt.

8. The process of Claim 6 wherein the difunctional amine is ethanolamine or a primary amine having 15 the formula:



wherein  $\text{R}^5$ ,  $\text{R}^6$  and  $q$  are as defined above; the diglycidyl ether of a bisphenol is the diglycidyl ether of bisphenol A.

9. The process of Claim 6 wherein the monofunctional nucleophile is selected from the group consisting of diethanolamine, N-(2-hydroxyethyl)piperazine, piperazine, diethylamine, dipropylamine, and dibenzylamine. 20

10. The process of Claim 6 wherein the monofunctional nucleophile is selected from the group consisting of phenol, acetic acid and propanoic acid and the catalyst is selected from the group consisting of a phosphonium or ammonium salt. 25

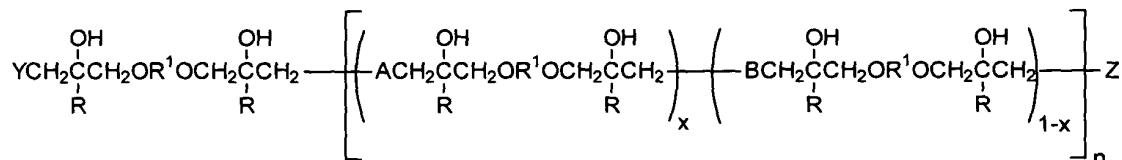
11. The process of Claim 6 wherein the solvent is selected from the group consisting of 1-methyl-2-pyrrolidone, 30 N,N-dimethylacetamide, water, diglyme, triglyme, diethylene

glycol ethyl ether, diethylene glycol methyl ether, or propylene glycol methyl ether.

12. A water-soluble polymer prepared by the process of Claim 6.

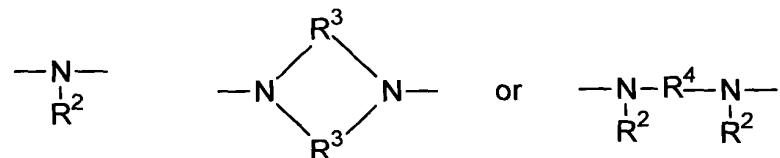
13. A composition comprising an aqueous fluid and the water-soluble polymer of Claim 1.

14. An aqueous solution comprising a polymer represented by the formula:

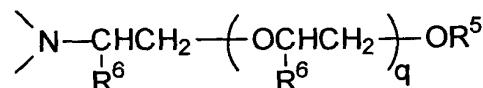


10 wherein each R is individually hydrogen or C<sub>1</sub>-C<sub>20</sub> alkyl; R<sup>1</sup> is an aromatic or substituted aromatic moiety; Y is an organic moiety that does not contain an epoxy group and Z is an organic moiety, optionally containing an epoxy group; x is 0-0.99; and n is 5-400; each A is individually an amino group represented by one of the formulas:

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wherein  $R^2$  is hydrocarbyl or substituted hydrocarbyl;  $R^3$  is  $C_2-C_{10}$  hydrocarbylene or substituted hydrocarbylene;  $R^4$  is  $C_2-C_{20}$  hydrocarbylene or substituted hydrocarbylene; and each B is represented by the formula:



wherein R<sup>5</sup> is hydrocarbyl; each R<sup>6</sup> is individually hydrogen, methyl, ethyl, hydrocarbyl or mixtures thereof; and x is 0-0.99 when q is greater than 40, but less than 0.2 or greater than 0.8 when q is less than 40.

15. The aqueous solution of Claim 14 wherein in the formula representing the polymer, R is hydrogen; each R<sup>1</sup> is individually isopropylidenediphenylene, 1,4-phenylene, 1,3-phenylene, methylenediphenylene, thiodiphenylene, 5 carbonyldiphenylene, or combinations thereof; each R<sup>2</sup> is individually methyl, ethyl, phenyl, benzyl, 2-hydroxyethyl, 3-hydroxypropyl, 2-hydroxypropyl, 2,3-dihydroxypropyl, 2-(acetamido)ethyl, or combinations thereof; R<sup>3</sup> and R<sup>4</sup> are individually ethylene, 1,2-propylene, 1,2-butylene, or 10 combinations thereof; and R<sup>5</sup> is C<sub>1</sub>-C<sub>20</sub> alkyl.

16. The aqueous solution of Claim 14 wherein viscosity increases as temperature is increased.

17. A process which comprises dissolving the polymer of Claim 1 in water, the water optionally containing 15 acids, bases, salts, solvents, or mixtures thereof.